Ananthu Rajendran Pillai

ananthurpillai547@gmail.com | +6584600277 | linkedin.com/in/ananthurp5

Skills

Programming: Python, SQL, C++, MATLAB

Frameworks & Libraries: PyTorch, Scikit-learn, OpenCV, Pandas, NumPy, Matplotlib, HuggingFace, LangChain

Tools & Others: Git, Linux, LaTeX

Work Experience

Energy Research Institute @ NTU, Singapore Mar 2024 - Dec 2024

Research Intern

- Enhanced a machine learning–based Model Predictive Control (MPC) system for building management by implementing targeted refinements, achieving a 25–40% improvement in energy efficiency.
- Designed and implemented robust data pipelines for training and validating predictive models using Python, PyTorch, and Scikit-learn.
- Collaborated with Ngee Ann Polytechnic to develop system architecture and database solutions, ensuring seamless integration of the MPC algorithm.
- Leveraged technologies including Linux, MySQL, NumPy, and Pandas to ensure scalability and performance.

Schneider Electric, Coimbatore, India Jul 2022 - Aug 2023

Electromechanical Design Engineer

- Spearheaded R&D initiatives for the TFTQ range of low-voltage switchboards, focusing on design optimization and lifecycle management.
- Developed an innovative closed-door operation (CDO+) solution for TFTQ boards (IP54 rating), contributing to a 20% increase in orders while ensuring IEC 61439 compliance.
- **Online Thermal Monitoring:** Integrated temperature and humidity sensors into switchboards to enable real-time monitoring and enhance product reliability.
- Utilized design tools such as PTC Creo Parametric and Ansys Fluent to validate and optimize product performance.

Nanyang Technological University, Singapore Jan 2024 - Present
M.Sc. in Computer Control and Automation ***CGPA: 4.42/5.00***
Relevant Coursework: Genetic Algorithms and Machine Learning, Machine Vision, Robotics and Intelligent Sensors, AI & Data Mining, System Analysis, Neural Networks and Deep Learning, Natural Language Processing.

College of Engineering, Trivandrum Aug 2018 - Jul 2022
B.Tech. in Electrical and Electronics Engineering ***CGPA: 9.71/10.00***
Relevant Coursework: Signals & Systems, Network Analysis, Linear Algebra, Probability & Statistics, Calculus.

Projects

- **ML-based Semantic Description for Smart Buildings:** Developed a pipeline to automate the conversion of service building drawings into Brick schema. Utilized multiple YOLOv8 models to detect objects in complex service drawings and extract bounding box coordinates. These coordinates were then fed to a Large Language Model (LLM) to infer relationships among components. Finally, the LLM enhanced by a Retrieval-Augmented Generation (RAG) approach with Brick schema documentation, produced the final Brick schema output.
- **Resume–Job Description Matcher:** Created a system with three main features: identifies which of 24 job categories a resume belongs to, classifies a resume against job descriptions as *no fit*, *good fit*, or *potential fit*, and leverages NER to parse skill sets in both resumes and job descriptions, providing feedback on missing or included skills. A BERT model was fine-tuned to power the classification and NER tasks.
- **Human Action Recognition in the Dark:** Developed a system to classify short video clips (2–3 seconds) capturing actions (jump, run, sit, stand, turn, walk) under low-light conditions. Implemented a traditional ML pipeline (frame sampling, feature extraction, normalization, and classification with Naive Bayes and Logistic Regression) and experimented with Vision Transformer models to enhance accuracy.

Extracurricular

- **NTUGSA Administration Subcommittee Member:** Organized volunteering events and team-bonding sessions.
- **National Service Scheme Volunteer:** 240 hours of community service.